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Impact of the Jigsaw Teaching Strategy on Classroom Performance among Nursing Students at a Selected College"

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Abstract

Introduction: Collaborative learning is an educational methodology where individuals engage collectively in pursuit of knowledge or skill acquisition. The jigsaw teaching method is a form of collaborative learning, initially introduced by Elliot Aronson in 1971 at both the University of Texas and the University of California. This method emphasizes team-based learning, wherein students are organized into groups or teams, each assigned a specific segment of the material to master. Within this framework, students initially join smaller expert groups to discuss and learn their assigned segment with peers from other groups. Upon mastering their segment, they return to their original groups to teach what they have learned to their teammates. This approach ensures that each student acts as an integral part of the learning process, resembling pieces of a puzzle that must come together to form a complete picture. The jigsaw technique underscores the

importance of each student's contribution, thereby fostering a sense of indispensability and effectiveness in the learning process. **Material and Methods:** Quasi-experimental research study, with probability simple random sampling techniques were used for study. Researcher studies exposing an experimental group to intervention of jigsaw teaching technique on classroom performance among nursing students. The study sample consisted of (n=40) is selected from selected college. **Finding of the study-** The finding of the study shows that mean of effectiveness of jigsaw teaching technique on classroom performance (conducting system) in pre-test is 0.7 and post test is 1.93, median of effectiveness of jigsaw teaching technique on classroom performance (conducting system) in pre-test is 1.0 and post test is 2.0, standard Deviation of conducting system in pre-test is 0.596 and post test is 0.253. The mean of the cardiac cycle in pretest is 1.93 and post test is 2.8, median of cardiac Cycle in pretest is 2.0 and post test is 3.0, standard deviation in pretest is 0.784 and Post-test is 0.484. The mean of anatomy and physiology in pretest is 4.5 and post test is 6.4, median of Anatomy and physiology in pre-test is 5.0 and in post-test is 7.0, standard deviation In pre-test is 1.479 and post test is 0.968. The mean of myocardial infarction in pre-test is 2.3 and post test is 4.5, median in pre-test is 2.0 and post test is 5.0, standard deviation in pre-test is 1.118 and post test is 0.731 The mean of angina pectoris in pre-test is 1.6 and post test is 2.2, median in pre-test and Post test is 2.0 and standard deviation in pre-test is 0.932 and in post-test is 0.626. The data related association between jigsaw teaching on classroom performance with Their demographic variables. **Conclusion:** Present study conclude that jigsaw teaching technique was effective for development of improving classroom performance at some extent according to the results finding.

Keywords- Effectiveness, Jigsaw teaching, Collaborative learning, classroom performance, anatomy and physiology.

INTRODUCTION

"Coming together is a beginning, staying together is progress, and working together is success."
– **Henry Ford**

"Talent wins games, but teamwork and intelligence win championships."

– **Michael Jordan**

Collaborative learning is a educational approach in which two or more people learn or attempt to learn something together. Collaborative learning is commonly exemplified when student groups join forces to explore comprehension, meaning, or solutions, or to generate a collective artifact or learning product. The jigsaw teaching strategy, pioneered by Elliot Aronson in 1971 at the University of Texas and the University of California, embodies a collaborative learning approach. The primary objective of this approach is to collectively study learning materials within groups to attain specific goals. The Jigsaw Classroom, as a collaborative teaching method, prioritizes teamwork and cooperation. In this method, students are divided into expert groups or teams, each assigned a distinct topic or segment of a lesson [1-0]. This learning tactic empowers every student

within a 'home' team to specialize in a particular aspect of the subject matter. Initially, students assemble into small groups, interacting with members from other groups. Subsequently, having mastered the material, they return to their original groups to instruct their team members. This strategy ensures that each student within a team functions as an indispensable piece of the larger puzzle, necessitating collaborative effort to complete the jigsaw puzzle. Aronson's emphasis on each student's essential role within the group underscores the effectiveness of the jigsaw strategy. Assignments designed by Aronson rendered every group member equally crucial, fostering attentive participation and information exchange. This approach encourages students to contribute small pieces to the collective understanding, highlighting the significance of mutual reliance and diminishing competitive attitudes within the group. The success of each student is intertwined with the overall performance of the group, fostering a cooperative dynamic essential for collective success [11-19].

Need For Study:

To a significant degree, the Jigsaw method facilitates active engagement in activities, motivating students and contributing to enhanced learning comprehension and critical thinking skills. According to researcher, one of the primary merits of the Jigsaw Method, along with other cooperative learning strategies, is its potential to eliminate classroom competition while fostering increased student cooperation. Collaborative learning creates a team-oriented atmosphere among groups, fostering greater acceptance among peers. The emphasis on academic achievement lies in its contribution to the group's success. The Jigsaw technique is an organizational approach to classroom activities that fosters interdependence among students for collective success. It involves dividing classes into groups, each responsible for a portion of an assignment, with synthesis occurring upon completion. Further investigations reveal that students engaged in cooperative learning, such as Jigsaw activities, not only mitigate peer pressure but also elevate their work standards. In 2013 exploration of racial relationships in primary and secondary education levels discovered that the Jigsaw technique enhances students' oral communication skills and bolsters their self-perception as scholars [20-31].

Objectives:

1. Evaluate the classroom performance of nursing students using conventional methods.
2. Evaluate the impact of the jigsaw teaching technique on the classroom performance of nursing students.
3. Investigate the correlation between the application of the jigsaw teaching technique and the classroom performance of nursing students concerning their demographic variables.

Hypothesis:

All the hypotheses will be tested at 0.05 level of significance [32-39].

H₀₁- There will be no significance of effectiveness of jigsaw teaching technique on classroom performance among nursing students.

H₁- There will be no significance of effectiveness of jigsaw teaching technique on classroom performance among nursing students.

H₀₂- There will be no significance association between jigsaw teaching technique on classroom performance among nursing students with their demographic variables.

H₂- There will be significance association between jigsaw teaching technique on classroom performance among nursing students with their demographic variables.

Variables: Variables are the attributes, features, or traits of individuals, objects, or situations that undergo alteration or diversity and are either manipulated or measured in research [40-47].

Independent variable: This refers to the variable controlled or adjusted by the researcher. In the current research, the independent variable is the jigsaw teaching technique.

Dependent variable: The dependent variable is the aspect, trait, or result that the researcher aims to comprehend, elucidate, or influence. In this study, the dependent variable is the performance in the classroom.

Setting and site of the study: The setting refers to the particular location where data is collected and can be either naturalistic or a laboratory environment. This research took place in a designated nursing college. Location: The study was carried out within the premises of the chosen nursing college.

Population: Population is the entire set of individuals or objects or elements having some common characteristics. The population included in the present study the population will be students of college of nursing during the data collection period.

Sample: A sample consists of a set of sampling units that represent a portion of the population. Typically chosen to be reflective of the population under study, these units help examine the variables in question. Sample for the present study will be the nursing students at selected college. Students available during data collection period were selected.

Sampling technique: In this sampling methodology, each member of the population has an equal opportunity to be selected as a participant. The selection process is conducted in one stage, where each participant is chosen independently from the rest of the population. The sampling strategy employed for this study was the probability-based simple random sampling technique.

Sample size: The 30 students of first semester of B.Sc Nursing were selected for study. Students were divided in 6 groups each of 5 members [48-52].

Inclusion criteria for sample selection:

- Students who attend college regularly.
- Students who are willing to participate in study.
- Students who were present during period of data collection.

Exclusive criteria for sample selection:

- Students who does not attend college regularly.
- Students who were absent during period of data collection.
- Students who are not willing to participate in study [53]

STATISTICAL ANALYSIS**Section A: Description of socio demographic variables of second semester B.Sc nursing students.**

Descriptive statistics were utilized to analyze the demographic information of the participants. This analysis included factors such as age, gender, religious background, family structure, and living area.

Table 1: Description of Age of second semester B.sc nursing students. n=30

Sr.no	Age	Frequency	Percentage
1	18-19	20	66%
2	20-21	10	34%
3	22-23	0	0%
4	Above 23	0	0%

Table 1 Illustrates the distribution of nursing students based on their age in terms of percentages. The data indicates that the majority (66%) fall within the 18-19 age bracket, while the remaining (34%) are in the 20-21 age range. Consequently, it can be inferred that the predominant age group among the students under investigation is 18-19 years.

Table 2: Description of Sex of second semester B.sc nursing students. n=30

Sr.no	Sex	Frequency	Percentage
1	Male	12	40%
2	Female	18	60%
3	Transgender	0	0%

Table 2 shows that Percentage wise distribution of nursing students according to their sex depicts that the highest percentage (60%) are in the sex group of females and (40%) are in males. Thus, it can be deduced that the majority of the students participating in the study were female.

Table 3: Description of Religion of second semester B.sc nursing students.

n=30

Sr.no	Religion	Frequency	Percentage
1	Hindu	24	80%
2	Muslim	01	3%
3	Christian	03	10%
4	Others	02	7%

Table 3 shows that Percentage wise distribution of nursing students according to their religion depicts that the highest percentage 80% are in the religion group of Hindu and 10% are in Christian and 3% Muslim and 7% others. Hence it can be interpreted that majority of the students under the study belonged to Hindu.

Table 4: Description of Type of family of second semester B.sc nursing students

n=30

Sr.no	Type of family	Frequency	Percentage
1	Joint family	08	26%
2	Nuclear family	22	74%
3	Extended family	0	0%

Table 4 shows that Percentage wise distribution of nursing students according to their type of family depicts that the highest percentage 74% are in the nuclear family and 26% are in joint family. Hence it can be interpreted that majority of the students under the study belonged to nuclear family.

Table 5: Description of Area of residence of second semester B.sc nursing students

n=30

Sr.no	Area of residence	Frequency	Percentage
1	Urban area	8	27%
2	Rural area	16	53%
3	Semi-urban area	6	20%

Table 5 shows that Percentage wise distribution of nursing students according to their area of residence depicts that the highest percentage 53% are in the rural area, 27% are in urban area and 20% are in semi urban area. Hence it can be interpreted that majority of the students under the study belonged to rural area.

SECTION B: Deals with analysis of data related to effectiveness of jigsaw teaching technique on classroom performance among selected college.

1. The mean, median, standard deviation of effectiveness of jigsaw teaching technique on classroom performance among nursing students (Conducting system):

Effectiveness of jigsaw teaching technique	PRE TEST			POST TEST		
	Mean	Median	SD	Mean	Median	SD
	0.7	1.0	0.596	1.93	2.0	0.253

Table 6: Mean of effectiveness of jigsaw teaching technique on classroom performance (conducting system) in pre-test and post-test.

Table 6 shows that mean of effectiveness of jigsaw teaching technique on classroom performance (conducting system) in pr-test is 0.7 and post test is 1.93, median of effectiveness of jigsaw teaching technique on classroom performance (conducting system) in pre-test is 1.0 and post test is 2.0, standard deviation of effectiveness of jigsaw teaching technique on classroom performance (conducting system) in pre-test is 0.596 and post-test is 0.253.

The mean, median, standard deviation of effectiveness of jigsaw teaching technique on classroom performance among nursing students (Cardiac cycle).

Table 7: Mean of effectiveness of jigsaw teaching technique on classroom performance (conducting system) in pre-test and post-test (Cardiac cycle).

Effectiveness of jigsaw	PRE TEST	POST TEST
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teaching technique	Mean	Median	SD	Mean	Median	SD
	1.93	2.0	0.784	2.8	3.0	0.484

Table 7 shows that mean of effectiveness of jigsaw teaching technique on classroom performance (Cardiac cycle) in pre test is 1.93 and post test is 2.8, median of effectiveness of jigsaw teaching technique on classroom performance (Cardiac cycle) in pre-test is 2.0 and post test is 3.0, standard deviation of effectiveness of jigsaw teaching technique on classroom performance (Cardiac cycle) in pre test is 0.784 and post test is 0.484.

2. The mean, median, standard deviation of effectiveness of jigsaw teaching technique on classroom performance among nursing students (Anatomy & Physiology).

Effectiveness of jigsaw teaching technique	PRE TEST			POST TEST		
	Mean	Median	SD	Mean	Median	SD
	4.5	5.0	1.479	6.4	7.0	0.968

Table 8: Mean, median, standard deviation of effectiveness of jigsaw teaching technique on classroom performance among nursing students (Anatomy & Physiology).

Table 8 shows that mean of effectiveness of jigsaw teaching technique on classroom performance (Anatomy & Physiology) in pre-test is 4.5 and post test is 6.4, median of effectiveness of jigsaw teaching technique on classroom performance (Anatomy & Physiology) in pre-test is 5.0 and post test is 7.0, standard deviation of effectiveness of jigsaw teaching technique on classroom performance (Anatomy & Physiology) in pre-test is 1.479 and post-test is 0.968.

3. The mean, median, standard deviation of effectiveness of jigsaw teaching technique on classroom performance among nursing students (Myocardial infarction).

Effectiveness of jigsaw teaching technique	PRE TEST			POST TEST		
	Mean	Median	SD	Mean	Median	SD
	2.3	2.0	1.118	4.5	5.0	0.731

Table 9: Mean, median, standard deviation of effectiveness of jigsaw teaching technique on classroom performance among nursing students (Myocardial infarction).

Table 9 shows that mean of effectiveness of jigsaw teaching technique on classroom performance (Myocardial infarction) in pre-test is 2.3 and post test is 4.5, median of effectiveness of jigsaw teaching technique on classroom performance (Myocardial infarction) in pre-test is 2.0 and post test is 5.0, standard deviation of effectiveness of jigsaw

teaching technique on classroom performance (Myocardial infarction) in pre-test is 1.118 and post-test is 0.731.

4. The mean, median, standard deviation of effectiveness of jigsaw teaching technique on classroom performance among nursing students (Angina pectoris).

Effectiveness of jigsaw teaching technique	PRE TEST			POST TEST		
	Mean	Median	SD	Mean	Median	SD
	1.6	2.0	0.932	2.2	2.0	0.626

Table 10: Mean, median, standard deviation of effectiveness of jigsaw teaching technique on classroom performance among nursing students (Angina pectoris).

Table 10 shows that mean of effectiveness of jigsaw teaching technique on classroom performance (Angina pectoris) in pre-test is 1.6 and post test is 2.2, median of effectiveness of jigsaw teaching technique on classroom performance (Angina pectoris) in pre-test is 2.0 and post test is 2.0, standard deviation of effectiveness of jigsaw teaching technique on classroom performance (Angina pectoris) in pre-test is 0.932 and post test is 0.626.

Section C: Data related to association between jigsaw teaching technique with their selected demographic variables.

Data related to association between jigsaw teaching technique with their selected demographic variables. Association between jigsaw teaching technique on classroom performance with their selected demographic variables (pretest and posttest) [54-56]. The effectiveness of jigsaw teaching technique on classroom performance among nursing students were calculated in chi square test (π^2) (0.2597, 1.425, 0.549, 0.5887, 1.8863).

CONCLUSION

Present study conclude that jigsaw teaching technique was effective for development of improving classroom performance at some extent according to the results finding.

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